

What Is Claimed Is:

1. A gas sensor for measuring at least one gas concentration, in particular for a vehicle climate control system, having
a substrate (2),
an IR radiation source (3) fastened on the substrate (2),
an IR detector (4) fastened on the substrate (2),
a measurement chamber (9) for receiving a gas having the gas concentration that is to be measured,
a shielding device (12, 22, 35) situated in the measurement chamber (9) between the IR radiation source (3) and the IR detector (4), for shielding a direct transmission of IR radiation (S) from the IR radiation source (3) to the IR detector (4) along an optical axis (A), and
a reflective surface (6) that has a concavely curved first mirrored area (7, 30, 33) for receiving the IR radiation (S) emitted by the IR radiation source (3), and that has a concavely curved second mirrored area (8, 31, 34) that reflects the IR radiation (S) to the IR detector (4),
the measurement chamber (9) being formed between the reflective surface (6) and the substrate (2).
2. The gas sensor as recited in Claim 1,
wherein the first mirrored area (7, 30) and the second mirrored area (8, 31) are fashioned with a spherical cross-section.
3. The gas sensor as recited in Claim 2,
wherein the reflective surface (6) is fashioned so as to be essentially semicircular.
4. The gas sensor as recited in Claim 2,
wherein the reflective surface (6) has a first spherical mirrored area (30), a second spherical mirrored area (31) situated at a distance from the first spherical mirrored area (30) in the direction of the optical axis (A), and a flat middle mirrored area (32) that connects the spherical mirrored areas (30, 31).

5. The gas sensor as recited in one of Claims 2 through 4, wherein the IR radiation source (3) and the IR detector (4) are adjacent to the reflective surface (6).
6. The gas sensor as recited in one of Claims 2 through 5, wherein the IR radiation source (3) emits IR radiation (S) at an angle of incidence of less than 45° to the first mirrored area (7, 30).
7. The gas sensor as recited in Claim 1, wherein the reflective surface (6) has a first parabolic mirrored area (33) in whose focus the IR radiation source (3) is situated, and has a second parabolic mirrored area (34) in whose focus the IR detector (4) is situated.
8. The gas sensor as recited in Claim 7, wherein the parabolic mirrored areas (33, 34) are situated at a distance from one another in the direction of the optical axis (A), and are connected via a straight surface area (32).
9. The gas sensor as recited in Claim 8, wherein the straight surface area is fashioned as a reflecting mirrored area (32).
10. The gas sensor as recited in one of the preceding claims, wherein the shielding device (12, 35) is fashioned at or as part of the IR radiation source (3), in particular as a small housing (12, 35) that surrounds an IR lamp (10).
11. The gas sensor as recited in one of Claims 1 through 9, wherein the shielding device is fashioned at or as part of the IR detector (4), in particular as a small housing (22) that surrounds the IR detector (4).
12. The gas sensor as recited in one of the preceding claims, wherein the substrate is a circuit board (2).
13. The gas sensor as recited in one of the preceding claims, wherein the reflective surface (6) extends uniformly in a longitudinal direction (L) that is parallel to the substrate surface and that runs orthogonal to the optical axis (A).

14. The gas sensor as recited in one of the preceding claims,
wherein a single IR radiation source (3) and at least two detectors (4) situated one
after the other in the longitudinal direction (L) are provided.